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STEP

AUTHOR: Bokin, P. Ya.

TITLE: Symposium on "Mechanical Properties and Structure of Inorganic Glasses"

PERIODICAL: Steklo i keramika, no. 9, 1962, 45 - 46

TEXT: The symposium, held in Leningrad in April, 1962, was organized by Leningradskoye pravleniye Vsesoyuznogo khimicheskogo obshchestva im. D. I. Mendeleyeva (Leningrad Board of Administration of the All-Union Chemical Society imeni D. I. Mendeleyev), Institut khimii silikatov im. I. V. Grebenshchikova AN SSSR (Institute of Silicate Chemistry imeni I. V. Grebenshchikov AS USSR), Gosudarstvennyy opticheskiy institut im. S. I. Vavilova (State Optical Institute imeni S. I. Vavilov), and Gosudarstvennyy nauchno-issledovatel'skiy institut stekla (State Scientific Research Institute of Glass). It was attended by 200 delegates from scientific research institutes and industrial establishments. Following are the most interesting of the 20 reports: G. M. Bartenev, A. S. Yeremeyeva, and V. A. Kargin reported on variations in the mechanical properties of glass in the field of polymorphous conversions including a third (mechanical-

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chemical) type of depolymerization discovered by the authors. V. V. Tarasov, V. A. Ratobyl'skaya reported results of experimental studies on sodium borate glasses, emphasizing the polymer structure of these glasses. A. V. Gladkov, Ye. A. Karabutova, and Ye. A. Yunitskiy reported on investigations of lead silicate and lead borate glasses which support the theory that these glasses are of polymer structure. G. M. Bartenev and A. S. Yeremeyeva spoke about the residual stresses in inorganic single-phase glasses, glass formers, and hyperelastic stresses in microheterogeneous glasses. O. K. Botvinkin and N. I. Ananich reported on three types of stress in glass which result from its rapid quenching, the development of anisotropic structures in its elements, the composition and form of its microphases; obviously these stresses affect its mechanical properties. K. T. Bondarev and V. A. Minakov spoke of relations between variations in strength and heat treatment of lithium aluminosilicate glasses containing small amounts of silver and of sodium-calcium aluminate glasses, with fluorine used as a catalyst. V. G. Chistoserdov's and I. A. Soboleva's report dealt with the bending strength of photosensitive lithium and cordierite type crystalline glasses at different temperatures. A. I. Avgustinik and L. S. Klanina reported on the relationship between the microhardness of lithium calcium silicate glasses and the development of

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"pre-seeding" groups and crystals determined in these by IR-spectroscopy. A. I. Korelova, O. S. Alekseyeva, and M. G. Degen spoke about the influence of the lithium oxide content and heat treatment on the microhardness and brittleness of lithium silicate glasses. F. K. Aleynikov, V. A. Slizis, R. P. Paulavichyus, and P. V. Durdzis reported on an investigation of the microhardness, microtensile strength, constants of elasticity, and structure of binary and ternary glasses containing various monovalent and bivalent metals, as well as on some commercial glasses. K. T. Bondarev, and S. Ye. Dvorkina spoke about the effect of the temperature of heat treatment on the mechanical strength of sodium borosilicate glasses. S. M. Brekhovskikh, G. K. Demishev, and L. N. Butovich stated that the constants of elasticity, the dielectric constant, and the loss angle tangent of perpendicularly drawn window glass all increase with increasing gamma dose. Ye. S. Sorkin described the method of investigating the crystallization in aluminosilicate glasses containing titanium oxide by measuring the deformation under isothermal static compression. F. F. Vitman, I. A. Boguslavskiy, and V. P. Pukh stated that they had succeeded in increasing the strength of flat glass by nearly 10 times (up to 100 kg per mm^2) by thermal hardening in a liquid and subsequent etching in hydrofluoric acid. F. F. Vitman and V. P. Pukh reported on tensile and bending tests of

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glass threads depending on the composition of the glass. G. M. Bartenev and L. I. Motorina found that the strength of glass fibers subjected to tensile stress can be improved by heat treatment. The delegates recommended to intensify research work on the relationship between the mechanical properties and the structure of inorganic glasses.